

Section 9

NOISE LEGISLATION

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Noise - Overview

1. Introduction and Overview

This section of the Handbook deals with EC legislation in the noise sector. This section contains a general overview and summary of the most important pieces of noise legislation targeting noise from mobile sources (e.g. road and non-road vehicles and aeroplanes), non-mobile sources (e.g. household machinery and outdoor equipment), as well as environmental noise. The introduction is followed by one specific fiche on the Environmental Noise Directive (2002/49/EC).

1.1 EU Policy

Environmental noise, caused by traffic and industrial and recreational activities, is considered to be a significant local environmental problem in Europe. It is estimated that millions of people suffer from noise levels that scientists and health experts consider unacceptable. The limitation of noise from transport vehicles and certain types of equipment is a necessary step towards reducing noise pollution in the European Community. The main focus of European Union noise policy is on noise abatement through the use of mandatory technical standards for products. The most important legal tools consist of a set of directives establishing noise emission limits for particular products: motor vehicles, motorcycles, tyres, aeroplanes, household appliances and outdoor equipment. In addition, there are two important new directives: the first provides for the imposition of noise-related operating restrictions at airports; the second provides for the creation of noise maps and action plans in order to reduce environmental noise.

1.2 EC Legal Instruments

Existing EC source-specific noise control legislation can be divided into four categories: motor vehicles, aeroplanes, outdoor equipment, and household appliances. In addition, a new directive is concerned with the assessment and management of ambient environmental noise caused by a broad range of human activities which includes means of transport and industrial activity.

1.2.1 Motor Vehicles

The first category includes two directives related to type-approval procedures for motor vehicles and motorcycles, with respect to noise emissions. The directives set limits on permitted sound levels for the vehicles, their exhaust systems and silencers, together with requirements for measurement and testing:

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- Council Directive 70/157/EEC¹⁹³ introduces limits on sound levels of road vehicles, and specifies procedures for measuring sound levels of exhaust systems and silencers.
- Council Directive 97/24/EC¹⁹⁴ on certain components and characteristics of two- or three-wheeled motor vehicles establishes limits for the permissible sound level of motorcycles, and requirements for exhaust or intake silencers. The directive also introduces harmonised testing procedures.

In addition, Directive 2001/43/EC relating to tyres for motor vehicles and their trailers and to their fitting introduces limits on the noise generated where tyre meets road. These limits differentiate between vehicle type (cars, vans and trucks) and tyre width (5 classes) and will be enforced by including tyre noise tests in EC type-approval certificate requirements, which must be met for any tyre to be placed on the EU market.

A number of studies have been carried out in the context of noise from motor vehicles targeting the above directives:

- tyre/road noise report (2006), parts 1 and 2¹⁹⁵;
- survey on motor vehicle tyres and related aspects (2004)¹⁹⁶;
- anti-tampering devices of two- and three-wheeled motor vehicles (2003)¹⁹⁷;
- noise reduction measures in the road transport sector (2003)¹⁹⁸.

Key Concepts

Strategic Noise Maps: Directive 2002/49/EC seeks to establish a common basis for addressing noise problems across the EU. Member States are required to appoint competent authorities to draw up "strategic noise maps" for major roads, railways, airports and agglomerations using harmonised noise indicators, with the public to be informed and consulted about noise exposure, its effects and the measures being considered to address noise. Competent authorities are then to draw up action plans to reduce noise where necessary and to maintain environmental noise quality where it is good.

Noise Emission Limits: Noise emission limits need to be set for motor vehicles, motorcycles and aircraft, and preferably incorporated in legal instruments. The various directives provide that Member States may not set more stringent noise levels than those contained in the directives. Technical and scientific advice on standards may be obtained from technical research and other government institutes, scientific advisors or independent consultants.

Type-Approval of Motor Vehicles: Motor vehicles and motorcycles are required to be type-approved, i.e. before a new production series is allowed on the market, the series must be examined to make sure that it conforms with certain specifications regarding safety and emissions characteristics for vehicles. There is a common European Whole Vehicle Type Approval system, which applies to all cars and motorcycles. National type approval is no longer allowed in EU Member States. The European Whole Vehicle Type-Approval is based on several dozen separate EC directives. Noise requirements make up only one small part of the

¹⁹³ Council Directive 70/157/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles, as amended by Directives 73/350/EEC, 77/212/EEC, 81/33/EEC, 84/372/EEC, 84/424/EEC, 87/354/EEC, 89/491/EEC, 92/97/EEC, 96/20/EC, 1999/101/EC and 2007/34/EC

¹⁹⁴ Directive 97/24/EC of the European Parliament and of the Council of 17 June 1997 on certain components and characteristics of two or three-wheel motor vehicles, as amended by Directives 2002/51/EC, 2003/77/EC, 2005/30/EC, 2006/27/EC, 2006/72/EC and 2006/120/EC)

¹⁹⁵ The report is available at: http://ec.europa.eu/enterprise/automotive/projects/report_tyre_road_noise1.pdf and http://ec.europa.eu/enterprise/automotive/projects/report_tyre_road_noise2.pdf.

¹⁹⁶ The report is available at: http://ec.europa.eu/enterprise/automotive/projects/report_motor_vehicle_tyres.pdf.

¹⁹⁷ Report is available at: http://ec.europa.eu/enterprise/automotive/projects/report_anti_tampering_devices.pdf

¹⁹⁸ Report is available at: http://ec.europa.eu/enterprise/automotive/projects/report_noise_reduction.pdf

requirements for type-approval. Furthermore, while many other characteristics of motor vehicles will be checked later in the life of the vehicle (through first inspections of individual vehicles, periodic vehicle inspections at pre-determined occasions, and roadside spot-checks), noise emissions are only controlled through the type-approval process.

Outdoor Equipment: Under Directive 2000/14/EC relating to noise emissions in the environment from equipment for use outdoors (as amended by Directive 2005/88/EC), covering a wide range of outdoor equipment, manufacturers can choose between different options for verification of compliance with noise requirements. The options range from self-certification to the verification of units by a notified body to the use of quality assurance systems. Where manufacturers elect to self-certify or use quality assurance systems, the directive provides for monitoring and surveillance of the process by notified bodies.

The Sixth Community Environmental Action Programme (6th EAP): The 6th EAP is a policy document setting the overall framework for action in the environmental field in the EU for a period of 10 years from 22 July 2002. The integration of environmental concerns in all Community policies and contributing to the achievement of sustainable development are key principles of the EAP, another being shared responsibility. The 6th EAP calls for a substantial reduction in the number of people regularly affected by long-term above average levels of noise, in particular from traffic, in the EU (and candidate countries), within the context of one of the eight priority action areas for environment and health and quality of life.

Shared Responsibility: Shared responsibility refers to a principle reflected in the 6th EAP, incorporating new ways of working with the market, involving citizens, enterprises and other stakeholders, in order to induce necessary changes in both production and public and private consumption patterns that have a negative influence on the state of, and trends in, the environment. In effect, this approach considers that only by replacing the command-and-control approach with an approach based on shared responsibility between the various actors can commitment to agreed measures be achieved. A Commission green paper on future noise policy has called for the application of the principle of shared responsibility in the noise sector.

Standards: Requirements related to product characteristics or procedures can be either legally defined or set in voluntary standards developed by national or international standardisation bodies. Laws can also reference standards developed by standardisation bodies, thus making them legally binding. The technical standards applied in the noise directives constitute a mix. The annexes to some directives contain specific noise measurement methods, while others make a reference to standards developed by the International Civil Aviation Organisation, or allow implementing states to create their own standards.

1.2.2 Aircraft

Four EC directives limit noise emissions from aeroplanes, and their operation, by reference to the Convention on International Civil Aviation. The directives deal with noise from subsonic aircraft, and with the operation of aircraft in the airports of the Member States:

- Directive 80/51/EEC on the limitation of noise emissions from subsonic aircraft (as amended by Council Directive 83/206/EEC) sets limits on noise emissions for aeroplanes registered in the territory of the Member States. Directive 83/206/EEC extends the application of Directive 80/51/EEC to cover aircraft from non-Member States flying to EU destinations.
- Directive 89/629/EEC of 4 December 1989 prohibits older noisy aircraft from being added to Member State registers.
- Directive 92/14/EEC on the limitation of the operation of aeroplanes covered by Part II, Chapter 2, Volume 1 of Annex 16 to the Convention on International Civil Aviation (as amended by Council Directive 98/20/EC and 1999/28/EC) sets stricter rules on the operation of aircraft by submitting all aeroplanes operating in airports situated in the territory of the EU to international noise standards (Part II, Chapter 2, Volume 1 of Annex 16 to the Convention on International Civil Aviation, second edition). Amending Directive

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98/20/EEC clarifies certain provisions in the directive, including exemptions and applicability to non-EU aeroplanes. Commission Regulation (EC) No. 991/2000 amends the list of exempted aircraft in the annex to the directive.

- Directive 2002/30/EC of 26 March 2002 lays down procedures for the introduction by Member States of noise-related operating restrictions at EU airports and permits more stringent provisions for certain city airports.
- Directive 2006/93/EC of the European Parliament and of the Council of 12 December 2006 on the regulation of the operation of aeroplanes covered by Part II, Chapter 3, Volume 1 of Annex 16 to the Convention on International Civil Aviation, second edition (1988) (codified version).

1.2.3 Railways

EC noise legislation also covers noise from railways. Most of the noise-restricting measures will be the responsibility of the candidate countries rather than the private sector, since most railway systems are still owned and operated by the state. The legislative framework comprises:

- Directive 96/48/EC¹⁹⁹ on the interoperability of the trans-European high-speed rail system, which has been detailed further through:
- Commission Decision 2002/735/EC²⁰⁰ on technical specifications for interoperability (TSI) relating to high-speed rolling stock;
- Commission Decision 2002/732/EC²⁰¹ on technical specifications for interoperability (TSI) relating to high-speed railway infrastructure;
- Directive 2001/16/EC²⁰² on the interoperability of the conventional trans-European rail system, supplemented by:
- Commission Decision 2004/446/EC²⁰³ specifying the basic parameters of the "Noise", "Freight Wagons" and "Telematic applications for freight" technical specifications for interoperability referred to in Directive 2001/16/EC;
- Directive 2004/50/EC²⁰⁴ of 29 April 2004 amending Council Directive 96/48/EC and Directive 2001/16/EC;
- Commission Decision 2006/66/EC concerning the technical specifications for interoperability relating to the subsystem "rolling stock - noise".

1.2.4 Outdoor Equipment

¹⁹⁹ Council Directive 96/48/EC of 23 July 1996 on the interoperability of the trans-European high-speed rail system.

²⁰⁰ Commission Decision 2002/735/EC of 30 May 2002 concerning the technical specification for interoperability relating to the rolling stock subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Directive 96/48/EC.

²⁰¹ Commission Decision 2002/732/EC of 30 May 2002 concerning the technical specification for interoperability relating to the infrastructure subsystem of the trans-European high-speed rail system referred to in Article 6(1) of Council Directive 96/48/EC.

²⁰² Directive 2001/16/EC of the European Parliament and of the Council of 19 March 2001 on the interoperability of the trans-European conventional rail system.

²⁰³ Commission Decision 2004/446/EC of 29 April 2004 specifying the basic parameters of the Noise, Freight Wagons and Telematic applications for freight Technical Specifications for Interoperability referred to in Directive 2001/16/EC

²⁰⁴ Directive 2004/50/EC of the European Parliament and of the Council of 29 April 2004 amending Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system.

Directive 2000/14/EC relating to noise emissions in the environment from equipment for use outdoors (as amended by Directive 2005/88/EC) aims to simplify pre-existing legislation covering outdoor equipment. The directive consolidates nine noise directives and extends their scope to cover 63 types of machinery (categorised as 57 items). The principal feature of the directive is the requirement that all equipment types be labelled for their guaranteed maximum noise level. In addition, the directive imposes noise emission limits for 22 types of equipment listed and harmonises methods of noise measurement. The directive sets out a range of options for conformity assessment. Manufacturers may choose from self-certification, unit verification and full quality assurance systems. Unit verification and the checking and surveillance of self-certification and full quality assurance systems are to be carried out by independent bodies appointed by Member States and notified to the Commission (“notified bodies”).

1.2.5 Household Appliances

The fourth category comprises one directive on noise emissions from household appliances, specifying voluntary requirements for labelling. Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-using products provides standards and procedures governing the provision of accurate information on the noise levels of household appliances.

Table - Noise Sector - Examples of Legislation Linked to Noise Emissions Legislation

Noise Legislation Category	Related Legislation
Vehicles	
Directive 70/157/EEC on permissible sound level and the exhaust system of motor vehicles	Directive 70/156/EEC (as last amended by Directive 2006/40/EC) relating to the type-approval of motor vehicles and their trailers.
Directive 97/24/EEC on certain components and characteristics of two- and three-wheeled motor vehicles	Directive 2002/24/EC relating to the type-approval of two- and three-wheeled motor vehicles.
	Directive 2005/64/EC on the type-approval of motor vehicles with regard to their re-usability, recyclability and recoverability.
Aeroplanes	
Regulation (EC) No. 1592/2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency	The directives and regulation give effect to Annex 16 to the Convention on International Civil Aviation. The convention, which EU Member States have ratified, comprehensively regulates international civil aviation.
Directive 89/629/EEC on the limitation of noise emissions from civil subsonic jet aeroplanes	
Directive 2006/93/EC on the regulation of the operation of aeroplanes covered by Part II, Chapter 3, Volume 1 of Annex 16 to the Convention on International Civil Aviation, second edition (1988)	
Household Appliances	
Directive 2005/32/EC establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC of the European Parliament and of the Council	Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations
	Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other

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	resources by household appliances.
Outdoor Equipment	
Directive 2000/14/EC on outdoor equipment is linked directly to existing legislation and to the Machinery Directive (98/37/EC) and Module Decision 93/465/EEC.	
Additional Directives	
Directive 74/151/EEC ²⁰⁵ relating to certain parts and characteristics of wheeled and agricultural and forestry tractors. The directive specifies type-approval requirements, and Annex VI contains provisions on permissible sound power levels, and conditions of measurement applied also to potential exhaust system silencers.	
Directive 77/311/EEC relating to the driver-perceived noise level of wheeled agricultural or forestry tractors ²⁰⁶ . Given the many amendments, the Commission issued a proposal ²⁰⁷ in 2007 for codifying the legislation for tractors to facilitate its reading and understanding.	
Directive 98/34/EC ²⁰⁸ laying down procedures for the provision of information in the field of technical standards and regulations and of rules on information society services.	
Directive 2003/44/EC of the European Parliament and of the Council of 16 June 2003 amending Directive 94/25/EC on the approximation of the laws, regulations and administrative provisions of the Member States relating to recreational craft.	

1.2.6 The Directive on Environmental Noise

Directive 2002/49/EC of 25 June 2002 aims to provide a common basis for tackling noise problems across the EU. It requires Member States to appoint competent authorities to draw up "strategic noise maps" for major roads, railways, airports and agglomerations using harmonised noise indicators. In line with the provisions of the Aarhus Convention, the directive requires the public to be informed and consulted about noise exposure, its effects and the measures being considered to address noise. Although the directive does not set any limit values or prescribe measures to be adopted, it requires competent authorities to draw up action plans to reduce noise where necessary and to maintain environmental noise quality where it is good.

1.3 Future Developments

1.3.1 Policy Documents

Environmental noise, caused by traffic and by industrial and recreational activities is a common and persistent local environmental problem in Europe, and the source of an increasing number of complaints from the public.

The Sixth Community Environmental Action Programme (6th EAP), a policy document setting the overall framework for action relating to the environment for a period of 10 years from 22 July 2002, continues the effort, begun further to the 5th EAP, to address noise pollution in a wider context. One objective of the 6th EAP is to "substantially reduce the number of people regularly affected by long-term above-average levels of noise, in particular from traffic (...), and prepare the next steps in the work with the (environmental) noise directive". To that end, two types of actions are envisaged:

²⁰⁵ Council Directive 74/151/EEC of 4 March 1974 on the approximation of the laws of the Member States relating to certain parts and characteristics of wheeled agricultural or forestry tractors, as amended by Directives 88/410/EEC, 97/54/EC, 98/38/EC and 2006/26/EC.

²⁰⁶ Council Directive 77/311/EEC of 29 March 1977 on the approximation of the laws of the Member States relating to the driver-perceived noise level of wheeled agricultural or forestry tractors, as amended by Directives 97/54/EC and 2006/26/EC

²⁰⁷ COM/2007/0588 final - COD 2007/020.

²⁰⁸ Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations as amended by Directive 98/48.

- Tackling sources: supplementing and further improving measures, including type-approval procedures, on noise emissions from services and products, from railway vehicles, aircraft and stationary machinery, and in particular from motor vehicles, including measures to reduce noise from the interaction between tyre and road surface that do not compromise road safety;
- Traffic noise mitigation: developing and implementing instruments to mitigate traffic noise where appropriate, for example by means of transport demand reduction, shifts to less noisy modes of transport, and the promotion of technical measures and of sustainable transport planning.

A Commission green paper on future noise policy (COM(96)540), which analysed the current situation and gave suggestions for future action, represented the first step in the development of a noise abatement programme. The green paper aimed to stimulate public discussion on the future approach to noise policy. It reviewed the overall noise situation and Community and national action taken to date. The green paper outlines a framework for action covering the improvement of information collection and its comparability, and future options for the reduction of noise from different sources. The first concrete result from the green paper was the development of a proposal for what subsequently became Directive 2000/14/EC on outdoor equipment.

1.3.2 A New Framework for Noise Policy

The purpose of the EU noise policy is to provide a coherent and co-ordinated approach to noise abatement efforts Community-wide (objectives to be enhanced and taken further pursuant to the 6th EAP). In its green paper on future noise policy, the Commission indicated that changes in overall approach are required to address a wider array of noise concerns, to determine how much noise from certain sources should be reduced; the level at which action should be taken; and the optimal measures or combinations of instruments to achieve an eco-efficient approach.

The green paper further indicated that there is a need for better co-operation across the EU to improve data collection and the comparability of information, and to improve the exchange of experience on noise abatement between Member States. It further suggested that the existing “command and control” compliance methods used for this and other pollution abatement efforts, should be replaced with a system of shared responsibility that brings all stakeholders to the table to agree upon the most effective course of action to reduce noise emissions.

Recognising that noise problems are generally viewed as local in nature, it is argued in the green paper that much of the machinery and equipment that constitutes the source of noise problems is not of local origin. As a consequence, effective action depends on co-ordinated policies at the local, national and EU level.

Directive 2002/49/EC on environmental noise is an important part of the effort to establish an overall noise policy. In addition, the Commission has created an EU noise expert network (whose mission is to assist the Commission in the development of its noise policy) and is providing financial support to a number of different noise-related studies and research projects.

2. Development of a Sectoral Strategy and Implementation Plan

2.1 Introduction

As with other environmental sectors, efforts to approximate EU noise requirements are best commenced with the development of strategies for managing noise (frameworks or “blueprints” that stipulate what actions will be taken, by whom and by when) and plans for implementing the strategies (containing the details of how these actions will be undertaken).

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The essential steps and decisions that need to be addressed in order to comply with current EU policies and legislation limiting noise emissions are outlined below. Strategies for managing noise in a broader context beyond the existing directives are also considered, taking into account the proposed expansion of EU policies and directives in this sector. The strategies have been developed mainly to address national government responsibilities for planning, overseeing and controlling the type-approvals and testing of vehicles, machinery and products identified in the directives. Many of the principles and techniques described herein will also be useful for consideration by local government authorities and private entities involved in regulating noise emissions.

The development of a noise sector strategy will be driven both by the requirements of the EU *acquis*, and also by national conditions and priorities. The integration of these two aspects is crucial to ensure a balanced strategy that responds both to EC environmental legislation and to national priorities and associated demands.

2.2 Strategy Development

2.2.1 Key Stages

In developing a noise strategy, taking into account the focus in the development of EU noise policy, supplemented by the 6th EAP, and the recent Directive 2002/49/EC on environmental noise, candidate countries should consider noise policy in an integrated context, focusing not only on source-specific noise emission limits as set in EC legislation, but also more broadly on the reduction of the number of people exposed to environmental noise.

The main steps involved in strategy development are summarised in the box below.

Steps to Developing a Noise Strategy

Review and analyse existing national policies and procedures controlling noise emissions and exposure.

Identify significant problems and deficiencies associated with existing systems for controlling noise emissions and reducing noise exposure.

Define strategic objectives for noise abatement efforts.

Identify and assess the options available for achieving strategic objectives.

Formulate an integrated noise management strategy based on the preferred option.

Prepare a detailed strategy implementation plan.

The main considerations for each of these stages are outlined below.

2.2.2 Stage 1 - Review and analyse existing situation

The purpose of this initial step is to gather all relevant information concerning noise exposure and noise emissions, especially focusing on the source areas covered by the EU directives (motor vehicles, aeroplanes, outdoor equipment, and household appliances).

- Nature and Scale of Noise-Related Problems
 - Identify the major sources of noise emissions, including information on equipment and activities that produce noise at volumes deemed to have harmful effects on human health.
 - Identify the number of people exposed to environmental noise, using common noise indicators as defined in Directive 2002/49/EC.

- Compile information on the production, import and export of motor vehicles, aeroplanes, outdoor equipment and household appliances that are specifically addressed in current and proposed EC directives.
- Institutional Arrangements, Legislation and Enforcement
 - Review current national and local laws and regulations relating to environmental noise and/or that set noise limits for specific sources or otherwise limit activities because of the noise emitted.
 - Identify and detail all legal requirements that pertain to type approvals and certification of products in the source areas covered.
 - Review institutional arrangements for implementing and ensuring compliance with legal requirements to assess their effectiveness.
- Public Perception and Attitudes
 - Research public attitudes on noise and identify incidences of specific complaints over noise problems. Focus in greatest detail on the source categories of the current EU directives, and also on transport and industrial noise.

2.2.3 Stage 2 - Identify significant problems and deficiencies associated with existing systems for controlling noise emissions

Having reviewed and analysed the existing situation, including public/consumer concerns, the next step will be to identify and define clearly the current problems and deficiencies associated with existing noise control efforts.

2.2.4 Stage 3 - Definition and Analysis of Strategic Objectives

In developing a noise strategy, candidate countries should consider noise policy in an integrated context, focusing not only on source specific noise emission limits as set in EC legislation, but also more broadly on the reduction of the number of people exposed to environmental noise.

Strategic objectives for national noise policies could include:

- setting a timeframe for meeting EC policies and legislation;
- ensuring that all (targeted) products manufactured, used or exported from the country are type-approved and meet EU and international noise standards;
- developing a legal and regulatory framework that is specific enough to meet current EU noise requirements yet flexible enough to incorporate further requirements as they are established;
- establishing a noise monitoring programme that can identify and monitor persistent noise problems;
- establishing and progressively implementing a national noise policy in order to reduce noise where necessary and maintain environmental noise quality where it is good.

2.2.5 Stage 4 - Identify and Evaluate Options for Achieving Objectives

This stage involves identifying, evaluating and comparing different options or alternatives for achieving objectives. In evaluating the options several threshold decisions need to be considered.

A Noise Framework Abatement Law or Source-Specific Legislation

In light of Directive 2002/49/EC on the assessment and management of environmental noise, candidate countries should adopt legislation aimed at monitoring, controlling and reducing ambient environmental noise as well as focusing on source-specific noise emissions.

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Institutional Development

The path taken in terms of legal transposition will affect the choices available in terms of institutional arrangements. Candidate countries need to designate competent authorities. They can choose to appoint either one competent authority, with responsibility for all noise directives, or to appoint separate competent authorities for the different directives. In the latter case, the competent authority could cover related types of directives as well (i.e. labelling of noise emissions and energy consumption of household appliances).

Domestic or International Type-Approval

Candidate countries will need to decide how to deal with type-approval of motor vehicles. Facilities issuing type-approvals for motor vehicles can either be established in the country itself, or the country can rely on services provided in other countries. Since in-country type-approval is not required for motor vehicles, countries can also choose to slowly build up their domestic capability to issue type-approval certification.

Public or Private Implementation

Both type-approval and inspection activities can be carried out by public entities or by private sector entities. Facilities responsible for type-approval have been privatised in some EU Member States, as have facilities that regularly check that the standards are maintained. The tasks can also be carried out as public-private partnerships.

Countries also have to decide how much of the monitoring and enforcement work they take on (i.e. spot checks), and to what degree noise emissions standards are made self-enforcing. For example, companies may be required to apply for type-approval in order that their products are allowed on the market. The standards can then be considered self-enforcing, if no further checks are undertaken.

2.2.6 Stage 5 - Strategy Formulation

Strategy formulation is the end result of the previous series of stages. It is the culmination of the options discussion and selection process, and should result in a government decision to move forward based on the preferred options. The strategy should be included as part of the country's NPAA efforts, and should go through the necessary consultation and approval procedures to be declared official policy.

2.2.7 Stage 6 - Strategy Implementation Plan

After development of the noise sector strategy, the next step in the approximation process is to prepare implementation plans. Unlike the strategy itself, which is typically aimed at a very wide audience, the implementation plan is primarily intended for use by those charged with executing the strategy. It therefore needs to elaborate in considerable detail all the tasks and activities that must be undertaken in order to realise the various objectives, proposals and programmes contained in the strategy.

It is suggested that the document comprising the strategy implementation plan should generally contain, as a minimum, the elements presented in the box below.

It should also be borne in mind that completion of strategy and implementation plans for noise represents only the first step in an on-going process. It is therefore vital that both the strategy and implementation plan are continually monitored and regularly reviewed to ensure that the various objectives, measures and underlying assumptions are still valid/appropriate, and that the time scale for achieving the overall goal of the strategy is still realistic.

Suggested Minimum Contents of an Implementation Plan for Noise

Identification of the authorities/agencies responsible for implementation (including transposition of EC directives into national law).

Identification and definition of all the key tasks and activities required in order to implement the adopted strategy.

The sequence, timing and linkages of key tasks and activities.

Key implementation decision points and milestones.

Detailed timetables for implementation.

Detailed estimates of the resources required and related costs.

Cash flow projections for the overall plan and for all plan sub-components.

A detailed financing plan.

Supporting data and explanatory text, as required e.g. identifying and detailing the allocation of responsibilities for key implementation tasks; the indicators of achievement to be used; and potential obstacles to successful implementation.

3. Institutions and Relevant Parties

3.1 Stakeholders

Development of a noise sector strategy, and its implementation will require the involvement of a number of stakeholders (institutions within the environmental administration, other agencies within the state administration, the private sector affected by the directives, and NGOs). In addition, the public must be granted opportunities to participate and influence the process of noise regulation. A plan should be created for involving stakeholders both during the strategy formulation stage and then as the policy is implemented.

The principal stakeholders, and their role in the process of developing and implementing a noise sector strategy that achieves compliance with EU policies and legislation, is outlined below. It is important to keep in mind that the scope of the policy (i.e. whether to include also regulations on additional products or activities other than those currently regulated through EU legislation), will have a direct effect on the number of stakeholders.

3.2 National Government Institutions

Noise policy is often characterised by fragmented responsibility, with several national government institutions involved and prominent roles for local government (through local nuisance ordinances). National government institutions will need to be tasked with overall responsibility to establish the overall noise policy reflecting relevant EC directives. If a comprehensive approach is taken, including setting ambient noise limits, then a single institution should be tasked with the policy setting role – typically the environment ministry.

In terms of meeting current EU requirements, the main institutions involved will be those that regulate product access to the market, including transportation, trade (customs), industry, environment and welfare/labour (worker safety).

3.3 Competent Authorities

Competent authorities should be in charge of day-to-day policy matters and implementation. They are typically subordinate institutions within the ministry with overall responsibility for developing and implementing noise policy and legislation, (e.g. the civil aviation department within the ministry of transport for aeroplanes). The competent authority has various tasks, including:

- developing draft legislation and amendments for the directives setting noise emission limits and procedures;

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- appointing and accrediting bodies to carry out strategic noise maps, action plans, noise measurements, unit verification (outdoor equipment), type-approvals (vehicles) and certification (for motorcycles) and to carry out checks where manufacturers self-certify and surveillance where full quality assurance systems are adopted (outdoor equipment); and
- preparing reports which the Member States are required to submit to the European Commission.

The designation of competent authorities will be driven by the decision on how comprehensive the noise policy will be. The practical implementation of market access EC directives is focused on product testing and approvals, and states taking this approach will need to consider where current responsibility resides for type-approvals and safety certification for these products. Many other considerations beyond noise will need to be addressed, including mobile source emissions (vehicles), electrical systems and wiring (appliances, machinery), collision impact safety features (vehicles), child safety features (appliances, vehicles), etc.

Principal Stakeholders and Their Roles in Noise Abatement

Stakeholders	Roles
Central government, in particular one or more of the ministries responsible for health, welfare/labour, industry, environment, transport and trade (customs)	<p>→ Overall responsibility for policy development and planning. Responsibility for compliance with EU noise requirements.</p> <p>→ Responsibility for various aspects of noise policy implementation, including ensuring the safety of the workforce using noisy machinery, and ensuring that imported products are certified as being type approved.</p>
Competent authorities (typically subordinated institutions within the ministries, or accredited private institutions)	→ Responsible for the practical aspects of noise policy implementation including: drawing up strategic noise maps and action plans, appointing and supervising notified bodies (for outdoor equipment), accrediting bodies to carry out type approvals, keeping up to date with international developments in noise policy, providing information (guidance) to industry on how to comply with legal requirements and standards, and informing consumers of their rights.
Regional and Local Government	→ Ensuring that local noise ordinances are developed (or revised) in harmony with national noise policy.
Industry, including producers and importers of motor vehicles, outdoor equipment and household appliances, and aviation companies	→ Responsible for seeking type approvals for new products, and certification that equipment placed on the market or in use (aeroplanes) meets EC and international noise standards

NGOs	➔	Representing the public interest, especially relating to ambient noise and consumer products such as household appliances and lawnmowers.
Public and consumers	➔	Directly affected by noise issues within the workplace, in proximity to noisy activities (airports, highways, urban construction sites), and as a result of purchasing appliances.

3.4 Regional and Local Government

Regional and local authorities often play a major role in noise abatement, through local zoning and land planning requirements and in developing local nuisance laws that restrict noisy activities (site specific and time specific). Such authorities are also likely to be involved in the drawing up of strategic noise maps and action plans pursuant to Directive 2002/49/EC on the assessment and management of environmental noise (and therefore to be part of the “competent authorities”).

3.5 Private Sector Involvement

Implementing the existing EC directives for noise will require the direct participation of producers and importers to ensure that type approvals have been obtained, and that the vehicles and equipment produced meet type-approved limits.

The Directive on Outdoor Equipment opens opportunities for greater private sector participation through the option of conformity assessment based on approved quality assurance programmes. Competent authorities may also choose to include the private sector in the type testing, approval and spot check procedures. The involvement of the private sector in this way may be useful as a means to utilise expertise and equipment that may not be available from within the government. However the use of private testing facilities will also require additional oversight on the part of the competent authority to make sure that the private institutions are carrying out their activities impartially and according to the law. This should include the development of an accreditation procedure that ensures that these institutions satisfy the minimum criteria set out in Annex IX to the directive.

If the established noise policy includes the setting of noise limits that are not currently included in EC law, then there is more latitude to actually develop noise standards. In this case, additional private sector consultations will likely be required, including advisory boards with private sector participation.

3.6 Communication and Consultation

Initially, noise directives did not specify a given set of consultation procedures, other than the requirement to report to the European Commission on actions taken to implement the directives. However, consultation procedures are now expressly required by Directive 2002/30/EC on noise-related operating restrictions at airports and Directive 2002/49/EC on the assessment and management of environmental noise. An effective noise policy that is compliant with these directives will therefore need to include various consultation procedures.

In addition, states should plan to establish a formal public notice and comment procedure that enables interested parties to comment on laws, regulations and implementing decrees prior to enactment. This formal procedure should include the requirement that the state (in this case the ministry responsible for developing noise policy) documents and provides written response to comments submitted.

The general public, NGOs and industry utilising noise-limited equipment should also be informed about developments in the noise sector. Notice should be given of pending actions, and the public should be able to comment. The public will be more directly affected by and is likely to become more involved with policies focusing on ambient noise levels and urban planning targeted at abating environmental noise. Brochures and reports explaining concepts and the current situation are important public information tools.

4. Technical Issues

The general purpose of technical standards is to establish minimum technical requirements for the quality of certain goods or resources, and/or their operation and performance. Within EU Member States, EU technical standards specified in directives or regulations take precedence over all other standards and national standards need to reflect and complement any relevant EU standards.

Several EC noise directives specify noise emission limits and noise measurement methods. Detailed noise measurement procedures are set out for motor vehicles and outdoor equipment. The methods are revised and up-dated by Committees established under the framework directives covering type-approval and type-examination for motor vehicles, and for outdoor equipment. These noise measurement standards are usually based on, and in line with, voluntary ISO (International Standardisation Organisation) standards. National transposition measures can sometimes include a direct reference to the relevant ISO or similar standards, making them legally binding. The Directive on Outdoor Equipment refers directly to ISO standards, and when producers of the equipment choose the mode of enforcement, they may choose to fully implement a quality assurance system based on ISO standards, and (although that system will be subject to monitoring and surveillance by a notified body) they will be exempt from other verification procedures regarding noise emissions.

The noise measurement methods specified for aeroplanes are adopted directly from the Convention on International Civil Aviation. The standards have been developed by the International Civil Aviation Organisation (ICAO). One of the main functions of ICAO is to develop international standards that are adopted and put into effect by contracting states in their own territories. The standards span all aspects of civil aviation, not only noise emissions.

The directive related to noise emissions from household appliances does not include emission limit values or noise measurement methods. When national implementing action is taken, Member States should refer to harmonised standards developed by the European Standardisation Committee (CEN), where such standards exist.

4.1 Relationship between Standards set in EC Directives and Voluntary Standards

At the international level, voluntary standards are developed by the International Organisation for Standardisation (ISO), which is a non-governmental, world-wide federation of national standards bodies from 130 countries. Industry-wide standardisation takes place when a majority of products or services conform to the same standards, which facilitates trade and technology transfer.

In the EU, national standards bodies co-operate through the European standardisation organisation, the CEN (Comité Européen de Normalisation). There are other standardisation organisations as well, focusing on specific products/processes, such as CENELEC (the European Electrotechnical Standardisation Organisation). The objective of CEN is to promote, create and harmonise European standards and to remove technical barriers to the internal market. The standards developed are voluntary, but some may go on to be adopted by the EU as the technical basis for directives or regulations. States may also opt to make reference to standards in their laws, thereby making them legally binding. Both national standards (either

nationally developed or international standards translated into the national language) or international standards can be referred to in national law.

4.2 Noise Measurement Methods

The limit values set out for motor vehicles cover seven types of motor vehicles and their silencers, and range from 74 dB(A) (passenger vehicles) to 80 dB(A) (certain goods vehicles). The directives apply to any motor vehicle intended for use on the road, having at least four wheels and a maximum design speed exceeding 25 km/h. Vehicles that run on rails, agricultural and forestry tractors, and all mobile machinery are not covered by the directive. Motorcycles are required to observe a 75 to 80 dB(A) limit. Sound levels have been progressively reduced.

The test methods for subsonic aircraft are complex and rigorous and can be time consuming. Aircraft types are required to be tested to show conformity with the noise limits of the International Civil Aviation Organisation (ICAO). Annex 16 to the Convention on International Civil Aviation gives a detailed test procedure for aircraft flying under three flight regimes and sets ground-level noise limits. The limits are in terms of the effective perceived noise level (EPNL) measured in EPNdB and are dependent on the weight of the aircraft. The heavier the aircraft the higher the noise limit, within certain overall constraints. All the necessary details of the test method are included in Annex 16 and no further standards are required.

In terms of outdoor equipment, specific noise limit values are set for a range of equipment under Directive 2000/14/EC. The directive also harmonises methods for the measurement of noise emissions. Labelling, but no noise limits, will be required for 41 types of equipment regulated under the new directive.

Directive 2002/49/EC on the assessment and management of environmental noise requires harmonised noise indicators based on ISO 1996-2: 1997 to be used for noise mapping. However, until common assessment methods are established by the Commission, Member States may apply and adapt data based on existing national methods of assessment.

5. Regulation and Enforcement

5.1 Overview

After competent authorities and notified bodies have been designated and standards set, practical measures must be taken to implement the noise directives. In this context, type-approval (for motor vehicles) and unit verification (for outdoor equipment) procedures and facilities need to be instituted, as do monitoring, enforcement, and reporting functions. Producers of outdoor equipment may also opt to use a quality assurance system (subject to monitoring and surveillance by an appropriate body). Noise certification requirements for aeroplanes need to be implemented, and measures taken to ensure that information provided regarding noise emissions from household appliances is correct.

The following section focuses on type-approval and type-examination procedures, and briefly discusses noise certification of airplanes. The section serves to illustrate that noise requirements are closely integrated with other technical requirements of machines, and that noise regulation and enforcement can never be considered or planned in a vacuum. More detail is provided regarding type-approval of motor vehicles, since these procedures are the most developed at EU level.

5.2 Type-Approval and Type-Examination

5.2.1 Motor Vehicles

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The testing of noise emissions from vehicles, motorcycles and exhaust systems is required under EU type-approval procedures.

Type-approval in general is a procedure whereby a manufacturer can obtain certification from a competent authority that the product meets the requirements of a certain directive. Thus whole vehicle type-approval is the procedure whereby a manufacturer can obtain certification from a competent authority that the complete vehicle meets the requirements of the type-approval framework directive. Directive 92/53/EEC, specifying type-approval procedures, is based on a list of separate directives, including one covering noise emissions (70/157/EEC). The list constitutes the technical requirements that a vehicle type must meet in order to be registered for use in any of the EU Member States. The type-approval system is based on mutual confidence amongst approval authorities, technical services, tests, and test reports. For the system to function each Member State must have confidence in other Member States' certifications and controls on the conformity of production.

Until December 1992, manufacturers had to obtain a vehicle type-approval from each Member State, with their own exclusive type-approval system, in which they wished to market a vehicle model based on approvals to separate directives. The EC whole vehicle type-approval system came into operation in January 1993 when the separate directives setting the technical requirements had been adopted and administrative procedures had been developed based on the experience of working with the directives acquired since 1970. Thus, Directive 92/53/EEC introduced one harmonised procedure to carry out a single type-approval of a whole vehicle. After three years of experience of applying the EEC type-approval on an optional basis the next step was its mandatory application for new types of passenger vehicles from the beginning of 1996. A passenger vehicle cannot be marketed in the EU, if it does not have an EEC type-approval. For other categories of vehicles the system will remain optional until all of the individual directives have been adopted.

Conformity of Production

The principle of the type-approval framework directive is that the competent authority that grants a type-approval for a vehicle, system, component or technical unit is, and remains, responsible for ensuring the conformity of production during the whole period of validity of the approval in question. One aspect of conformity is that of noise emissions conforming to the level of emissions allowed and specified in the type-approval. The Member State is required to assess conformity of production measures in two stages. Before granting approval the competent authority must verify that adequate arrangements for ensuring conformity of production have been taken by the applicant. After having granted type-approval, the competent authority must verify that the conformity of production arrangements of the manufacturer continues to be adequate. This verification may be carried out at the level of the manufacturers' technical equipment and control programmes, but may also be extended to the actual testing of selected production samples through spot checks.

Registration, permit to sale or entry into service

Under the terms of Article 7 of 92/53/EEC, each Member State shall register and permit the sale or entry into service of new vehicles on grounds relating to their construction and functioning if, and only if, they are accompanied by a valid certificate of conformity, which is, in effect, a statement by the manufacturer that the vehicle conforms to the relevant type-approval. Member States cannot refuse to register vehicles for use on their roads if they comply with a properly issued EEC type-approval. Conformity with the noise emission requirements are only one component of what is required for registration or permit for sale and entry into service.

5.2.2 Outdoor Equipment

Manufacturers of outdoor equipment can choose between three different options for ensuring conformity of production under the Directive on Outdoor Equipment. These are self-certification; implementing a full quality assurance programme; and unit verification, a modified version of current type-examination procedures that includes noise emissions testing. Unit verification

procedures are similar to type-approval procedures. Outdoor equipment must have undergone conformity of production procedures before they are allowed on the market (individual equipment must be labeled appropriately and furnished with an EC declaration of conformity). Self-certification is necessary for outdoor equipment for which only noise labelling and an EC declaration of conformity is required. In all cases, a copy of the declaration should be sent to the Commission.

In addition to carrying out unit verifications, the authorities or institutions designated as notified bodies will be responsible for periodic (and where necessary) random checking of self-certification and for the approval, monitoring and surveillance of systems of full quality assurance that are put in place by manufacturers.

5.3 Noise Certification and Registration Requirements

5.3.1 Aeroplanes

The EC noise directives require that noise emissions from aeroplanes operating in the EU are regulated. This legal requirement is implemented through noise certification requirements for registration and operation in Member State airports. Member States have the option to create their own systems of certification and registration. In practice, these systems follow the Convention on International Civil Aviation.

5.4 Monitoring, Inspection and Enforcement

Monitoring, inspection and enforcement are intended to give practical effect to ensure that legal requirements and mandatory standards are being complied with. The monitoring, inspection and enforcement tasks in the noise sector are related to ensuring that noise emissions, at the time of manufacture and entry into market of a product, are in compliance with the specifications of the relevant directives. (In the case of aeroplanes, the registration requirement, and the operation in Member State airports, trigger the noise directives. These actions take place not only at the time of production or first registration, but also when aeroplanes are bought and sold, or apply to enter new airports.)

The following are key monitoring, inspection and enforcement tasks in the noise sector:

- The competent authority/ies must ensure that products put on the market comply with the noise directives. They must register and permit the sale and use of motor vehicles only if they have a valid certificate issued by the manufacturer as the holder of the type-approval/examination or other validation of conformity of production. The competent authority is advised to have a register of all types of products covered, which are produced in the country or imported. Registration should be conditional on proper certification. Similarly, outdoor equipment covered by Directive 2000/14/EC should not be placed on the market unless it bears the requisite markings and is accompanied by an EC declaration of conformity. Where such markings and the declaration are present, the equipment must be assumed to be compliant with the directive.
- Noise measurement methods defined in the relevant directive must be used. Only certified or accredited testing laboratories should be allowed to perform the tests. National accreditation authorities are likely to be involved in accrediting laboratories for making noise measurements.
- Motor vehicles placed on the market are furnished with certificates of conformity, or other documents stating conformity with the type approved. Periodic verification inspections through spot checks may be required to reinforce the self-certification procedure or the certificate of conformity, confirming compliance of production to the type-approved. Similarly, where the conformity of outdoor equipment is self-certified, periodic checks (and in some cases, random checks) are required. Where manufacturers rely on a

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system of full quality assurance, that system should also be monitored and inspected by an appropriate body.

- In order to ensure that products imported into the country meet required noise limits, it will be important for customs authorities to verify that products have received the necessary type-approval/examination. If the products have not received type-examination, or the situation is unclear, the competent authority (in the capacity of being responsible for registering products for the market) should be notified. The competent authority would then authorise investigations and tests in accordance with provisions for type-approval/examination, and the product would either be approved for the market or rejected. The importer would be responsible for the expenses incurred.
- If equipment is found not to meet type-examination certification standards, the certificate holder must be required to rectify production within a specified time period (during which certification can be suspended). Certification can be withdrawn or suspended as deemed necessary by the approval body. A system of fines and enforcement procedures must be defined to ensure that sub-standard equipment is prohibited from the market.
- Product manufacturers/importers should have recourse to an appeals process (against decisions by the competent authority/approved body).

The essential features of an effective monitoring, inspection and enforcement regime are:

- legally well-defined inspection and enforcement powers, and corresponding sanctions;
- sufficient, appropriately qualified and motivated human resources;
- sufficient and appropriate technical resources (equipment, etc.);
- clear, properly documented operational systems and procedures; and
- comprehensive systems for storing, recording and retrieving data and information.

Without these elements, it is difficult, if not impossible, to give effect to established policies, legislation and standards governing product related noise emissions.

5.5 Data Collection and Reporting

An obligation exists in most directives to report to the Commission on progress in implementation and the level of compliance achieved. There are also provisions for informing the public about household appliance noise levels, informing and consulting the public on ambient noise exposure and its effects, and informing other Member States about technical issues. Specific reporting requirements relate to:

- provisions of national law adopted in the field of each directive;
- technical measures adopted to comply with directives;
- authorities designated to undertake approvals under provisions of directives, and the equipment approved by them; and
- methods used to measure noise emission levels.

The original reporting requirements in several directives have been modified by Directive 91/692/EEC on standardising and rationalising reports on the implementation of directives relating to the environment. According to Directive 91/692/EEC, reporting shall take place every three years in the form of sectoral reports done on the basis of an outline or questionnaire provided by the Commission.

6. Priorities and Timing

Priorities and timing will be driven first and foremost by the objectives and options selected during strategy formulation. It is likely that for candidate countries the practical issues of transposing and implementing the EC noise directives will drive prioritisation and timing. Prioritisation and timing among the four source categories and individual directives will depend in part on the level of current regulatory activity in these areas in each country.

7. Economic and Financial Issues

7.1 Introduction

The main costs imposed upon government by the directives in the noise sector will be:

- establishing the authorities responsible for overseeing the agreed noise emission levels and drawing up “strategic noise maps”;
- setting up laboratories or other institutions carrying out the measurements or verification measures needed concerning type-approval or type-examination. These costs will be borne primarily by the competent authorities, even if the services are contracted to private laboratories. Costs for the establishment and operations of public and private laboratories may be partially off-set through fees paid by equipment and vehicle manufacturers and importers. Candidate countries may also choose to utilise the type-approval and examination facilities of other Member States, and thereby delay, or reduce the costs of setting up domestic facilities.

The main costs imposed upon producers and consumers are compliance with emission limits and technical requirements under the directives. These costs will be borne by the producers of vehicles, aircraft and equipment (industry) or by consumers (households, motorists etc). Laboratory fees related to type-approval may also be borne by product producers.

The costs for government may be significant, depending on existing institutional arrangements and the presence of measurement and laboratory facilities for testing, examination and type-approval. The costs for producers and consumers will depend on the extent to which producers will need to modify equipment to meet the new noise standards. It is assumed that a portion of these costs will be passed on to consumers.

7.2 Cost Elements

7.2.1 General Issues

Most of the noise directives (those on vehicles and outdoor equipment) concern type-approval/conformity assessment of industrial products with respect to their sound level. Candidate countries can, to a large extent, minimise costs associated with type-approval/conformity assessment procedures.

A Member State does not necessarily need to provide actual EU type-approval services itself, because manufacturers can apply for type-approval in another Member State. In such cases, national type-approval may be granted to EU type-approved industrial products on the basis of the importer's certificate of conformity (based on EU type-approval issued by another Member State).

For domestic industrial products covered by the directives, it might be preferable to perform tests for national/EU type-approval to verify compliance with the noise directives. Testing services for noise emissions from manufacturing products can be performed at any accredited technical organisation offering such testing services. These facilities can be situated in any Member State. The responsibility to acquire such test results is borne by the manufacturer. Therefore, the state does not necessarily need to offer such a service nationally. However, where self-certification or full quality assurance systems are applied, the state is required to conduct monitoring and

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surveillance of the process by notified bodies. Conformity requirements for outdoor equipment can also be achieved by industry through quality assurance programmes. When noise issues are embedded in a more comprehensive quality assurance programme, the costs related to noise standards can be reduced.

7.2.2 Public Costs

The institutional cost item consists of costs related to the establishment or expansion of type-approval facilities and institutions. The costs here are likely to be moderate, as such facilities and institutions already exist, and since such approval procedures can take place in any Member State, i.e. candidate countries do not necessarily have to establish their own procedures. Further, probably moderate, costs may be incurred where verification processes are needed for the monitoring and surveillance of self-certification and full quality assurance systems. Additional costs will be incurred in order to put in place systems for the preparation of noise maps and action plans to address the problem of ambient environmental noise.

The enforcement of the directives requires increased staffing and training at the type-approval/examination authorities and at the facilities performing tests. More staff are needed for performing periodical checks of industrial products in use, for spot checks, and for inspections to verify the conformity of production (if the industrial products covered are being produced in the Member State), and as regards verification where self-certification or full quality assurance systems are applied. These costs are very nation specific, as they depend on local wage levels, as well as on the scale of testing activities. The testing activities depend on the volume and diversity of the industrial products covered by the noise directives that are being introduced and tested.

7.2.3 Private Costs

National producers could encounter additional costs when adjusting their production processes to the new noise limits, and establishing in-house noise testing facilities. If the increase in production costs is passed over to the consumer, sales reductions can result. However, if the domestic producers want to export to the EU, it is likely that they will have to conform to these requirements anyway. Therefore, these costs cannot be viewed entirely as accession-related costs.

On the other hand, consumers in the candidate countries could face such price increases already before their countries join the EU (for example, in the case of imported vehicles, when the effect of the noise directive implemented in Western Europe has already been embodied in the price). As noise reductions for the type of vehicles covered by the noise directives is generally achieved as part of the integrated design and construction of the vehicles, it is very difficult to distinguish costs directly associated with the noise directives.

8. Summary of Key issues

In order to minimise the administrative burden and associated costs of implementing legislation in this sector, candidate countries should endeavour to focus their efforts and actions on addressing those issues and requirements that are fundamental to EU approximation in this sector, in particular by ensuring that:

- a strategy and detailed plan/s for the future management of noise emissions from motor vehicles, aeroplanes, outdoor equipment, and household appliances are prepared and implemented;
- a strategy for the assessment and management of ambient environmental noise using noise mapping techniques and the drafting of action plans, including providing for the information and the participation of the public, is adopted;

- arrangements are put in place for the effective involvement and participation of all relevant bodies and interest groups that have a significant role/function to perform in relation to noise emissions;
- appropriate competent authorities and approved bodies are designated or established, and their respective duties, functions and powers are clearly defined;
- sufficient human and technical resources are allocated to allow all key functions and tasks to be performed properly, especially those relating to regulation and enforcement; and
- the resources and expertise of the private sector are mobilised and utilised in appropriate ways.

A series of checklists of the key questions that should be considered in preparing and implementing such a strategy/ies are present in the tables below.

Table - Noise Sector General Activities

Function	Action required
Policy development and approximation planning	Assign responsible authority (ies) for approximation of noise sector directives
	Develop gap assessment tables comparing EC noise directive requirements with country laws, regulations and standards
	Decide on legal approach to sector directives (e.g. establishing a noise framework law, developing laws based on the four equipment types or creating a law for each directive, establishing the preferred mix of laws and implementing regulations)
	Assess the institutional requirements to implement the EC noise directives, and compare to existing institutional framework.
	Decide on preferred institutional approach for noise approximation. This includes the decision on whether to have the environmental ministry and/or other ministries oversee all or parts of the regulatory programme for noise. Other ministries involved typically include health, welfare/labour, industry, transport or environment.
	Develop an action plan for bridging legal gaps and meeting institutional requirements
	Consider cost and financing implications of implementing legal and institutional changes
	Develop a finance plan to meet cost requirements
	Obtain necessary approvals for action plan through cabinet of ministers (and possibly parliament).
	Provide public notice of planned course of action to implement regulatory programme for noise.

Table - Noise Directives Concerning Motor Vehicles (and Motorcycles)

Function	Action required
Legal transposition/ implementation	Develop and implement legislation specifying methods for measuring sound levels, setting noise limits, and setting requirements for exhaust systems and silencers.
Institutional development	Designate competent authority.
	The competent authority should be responsible for type-approval and should identify certified institutions for performing tests for noise certification for type-approval.
Policy and planning	Institute national type-approval system, or, alternatively, establish procedure relying on type-approvals issued in other states.

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	Establish application procedures for vehicle producers to obtain type-approval certificates for motor vehicles and exhaust systems
Technical standards and laboratory analysis	Identify and accredit facilities capable of performing noise measurements.
Monitoring, surveillance and enforcement	Ensure that the competent authority registers and permits the sale of or entry into service of new vehicles only if they are accompanied by a valid certificate of conformity, which is a statement by the manufacturer that the vehicle conforms to the relevant type-approval.
	Institute procedures to verify conformity of production (with noise limit certification). Measures to verify conformity can be taken at the point of production.
	Establish monitoring system to verify conformity, including spot-checks of vehicles on the market. A decision needs to be made on the authority responsible for carrying out spot checks – typically the traffic inspectorate, environmental administration/inspection and/or the customs authority (regarding imported vehicles).
	Establish penalty procedures for vehicle producers and importers of vehicles not in compliance with noise requirements (not in conformity with the type-approval).
Finance	As part of the overall finance plan for the noise sector, develop a finance plan for meeting the requirements of the vehicle-related noise directives, especially relating to costs of type-approval and spot checks of the conformity of production.
Reporting and public information	Set up information collection, review and dissemination procedures, to include compliance information to vehicle producers, wholesalers and retailers, general information to the public, and reporting to the Commission.

Table - Noise Emissions From Airplanes

Function	Action required
Legal transposition/ implementation	Develop and enact legislation and implementing regulations setting noise limits for aeroplanes, based on standards specified by the International Civil Aviation Organisation. Legislation should specify test methods (in accordance with Annex 16 of the Convention on International Civil Aviation). Specify exemptions to the law, and indicate recognition of certification documents from other Member States.
Institutional development	Designate a competent authority ultimately responsible for granting noise certification, controlling that registered aeroplanes have the requisite noise certification, and that aeroplanes applying to enter national airports fulfill the noise requirements.
	Designate authority/ies responsible for registration, for noise certification of aeroplanes, and for approval of the operation of aeroplanes in Member State territory (if different from the competent authority). Designate authority/ies responsible for the imposition of operating restrictions and an independent body to hear appeals (when required) against decisions to impose such restrictions.
	Certify laboratories/testing facilities to perform noise certification tests. Ensure that certified institutions are independent of vested interests.
Policy and planning	Ensure that noise standards are included in aeroplane registration requirements. Aeroplanes that do not comply with the directives cannot be re-registered.
	Consider implementing a noise reduction and abatement programme as part of air traffic planning using noise maps and action plans.

Technical standards and laboratory analysis	Ensure that technical noise standards and testing methodologies are based on ICAO specifications. (Initial laboratory analysis is the responsibility of the manufacturer.)
Monitoring, surveillance and enforcement	Establish a system for granting noise certificates to aeroplanes, and for granting approval for the operation of aeroplanes in the territory of the Member State. Establish a system for imposing noise-related operating restrictions at airports.
	Ensure that foreign aircraft in violation of set standards are prohibited from operating in the Member State.
	Condition aeroplane registration on certification (thus streamlining the implementation of certification procedures).
	Consider installing and using noise measurement equipment at airports for either continuous or spot-check noise monitoring at take-off and landing, to verify that the noise certification information of aeroplanes using the airport is correct.
	Develop a penalty protocol for effective enforcement of the directive
Finance	Develop financing plan and decide on financing methods (public/private).
Reporting and public information	Set up information collection, review and dissemination procedures, to include compliance information to aeroplane producers, airlines and air service companies, general information to and consultation with the public, and reporting to the Commission.

Table - Permissible Noise Emissions: Outdoor Equipment

Function	Action required
Legal transposition/ implementation	Identify institutional authority responsible for the national transposition of the directive.
	Establish an inter-ministerial process for input into the transposition process.
	Based on gap analyses, establish new and amended laws and regulations for the harmonisation of national laws with the EC directives.
	Enact legal provisions and guidelines for national certification of conformity (with noise limits for outdoor equipment).
	Enact legal provisions and issue guidelines for a noise emissions labelling programme for outdoor equipment.
	Establish legal provisions for test procedures, and establish an enforcement system (i.e. spot checks and fines).
Institutional development	Designate competent authority responsible for overseeing the noise abatement programme, as well as an audit system, for outdoor equipment.
	Designate notified body/ies (under the supervision of the competent authority) to be responsible for managing unit verification and for overseeing self-certification and systems of full quality assurance.
Policy and planning	Institute appropriate conformity assessment procedures covering outdoor equipment.
	Establish and oversee a system of regulatory controls, to ensure that equipment that complies with the requirements of the directive has access to the Member State market, while equipment that does not comply with the provisions of the directives is excluded from the market.
	Establish more stringent noise emission limits in designated sensitive areas.
Technical standards and laboratory analysis	Develop noise emission standards for 22 types of outdoor equipment.
	Specify uniform test methods.
	Certify and periodically review certification of testing laboratories, (public or private, existing or newly created).
Monitoring, surveillance and	Develop and maintain a register of all outdoor equipment produced in the country or imported.

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enforcement	Ensure that only conformity-assessed equipment, furnished with a valid certificate issued by the manufacturer, is registered for sale and use.
	Ensure that outdoor equipment requiring labelling of noise emissions has met the requirements.
	Develop and institute a system of enforcement procedures (e.g. fines, certification suspension or withdrawal) to ensure that equipment in violation of the noise emission limits is removed and prohibited from the market.
	Initiate compliance schedules against producers of equipment not in compliance, specifying time period to achieve compliance (during which certification is suspended).
	Undertake periodic verification inspections (e.g. once every two years) to confirm that outdoor equipment manufactured in the country conforms to requirements.
	Establish appeals procedures for equipment manufacturers/importers to have certification and penalty decisions reviewed.
	Institute periodic performance reviews of the authorised certifying bodies.
Finance	Decide on financing methods (public/private) and identify sources of financing.
Reporting and public information	Provide opportunities for industry interests to comment on proposed legislation, standards and testing methods, and on possible incentives for meeting uniformity in testing methods.
	Provide opportunity for public input through notice of pending action and public comment procedures.
	Report to the Commission as required.

Table - Noise Emissions from Household Appliances

Function	Action required
Legal transposition/ implementation	Develop, enact and implement legislation specifying the provision of information regarding noise emissions from household appliances.
	Enact legislation through implementing regulations, which should specify statistical methods, test methods and procedures (national standards are accepted).
Institutional development	Designate a competent authority that will, in turn, if necessary authorise an approved body responsible for implementation.
Policy and planning	Decide on whether to include a labelling programme for noise levels of household appliances (voluntary).
	Decide on how to integrate the provision of information regarding noise with other labelling requirements for household appliances. Such labelling can, for example, be included as part of the mandatory label on energy consumption of household appliances.
Technical standards and laboratory analysis	Issue technical standards for testing
	Accredit laboratories for making required tests.
Finance	Decide on financing methods (public/private) and identify sources of financing.
Monitoring, surveillance and enforcement	Standardise label formats, and create a system for monitoring the accuracy of the information provided by producers/importers on product labels.
	Establish a system of penalties for producers/importers providing false information on product labels
Reporting and public information	Set up information collection, review and dissemination procedures, to include compliance information to producers, wholesalers and retailers of household appliances, general information to the public, and reporting to the Commission.

Table - The Assessment and Management of Environmental Noise

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Function	Action required
Legal transposition/ implementation	Develop, enact and implement legislation for the drawing up of noise maps, the provision to the public of information on environmental noise and the creation of action plans.
	Legislation should use harmonised noise indicators for noise mapping, but existing methods of assessment may be used until common methods are adopted by the Commission (alternatively interim recommended methods are provided in the directive).
Institutional development	Designate a competent authority or authorities that will be responsible for making, approving and collecting noise maps and action plans.
Policy and planning	Decide on how to identify agglomerations, major roads, railways and airports that are subject to the provisions of the directive.
	Separate the agglomerations, roads, railways and airports into two stages, in accordance with the requirements of the directive.
Technical standards and laboratory analysis	Use harmonised noise indicators for noise mapping. Until common assessment methods are established by the Commission, data based on existing methods of assessment may be applied and adapted.
	Create a system for adapting data based on existing assessment methods.
Finance	Decide on financing methods and identify sources of financing.
Monitoring, surveillance and enforcement	Monitor the drawing up and review of noise maps and action plans.
	Monitor and enforce compliance with measures imposed in action plans.
Reporting and public information	Communicate to the Commission details of the agglomerations, major roads, railways and airports covered by the directive. Ensure operation of public consultation and notice procedures.

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The Environmental Noise Directive

Official Title: Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (OJ L 189, 18.7.2002).

1. Summary of Main Aims and Provisions

It has been estimated that at least 25% of the EU population experience a reduced quality of life due to environmental noise-induced annoyance and that between 5% and 15% of the population suffers serious noise-induced sleep disturbance. It is further estimated that in the EU environmental noise costs between EUR 13 and 38 billion per annum due to medical costs, lost workdays, reduction in house prices and reduced land use potential.

The aim of the directive (which is also reflected in the approach to noise strategy embodied in the 6th EAP) is to provide for a common approach to the avoidance, prevention and reduction of the harmful effects of exposure to environmental noise. The directive seeks to harmonise noise indicators and assessment methods for environmental noise. Using these common indicators and assessment methods, it seeks to gather information in the form of strategic noise maps. Such information will be made available to the public and will form the basis for action plans at the local level. The directive does not seek to set common EU-wide noise limits. The setting of limits remains the responsibility of Member States.

The approach of the directive is similar to that for air pollution laid down in Directive 96/62/EC, which defines the approach for the management of air quality based on harmonised methods, action plans and informing the public

The aims of the directive are to be achieved by the progressive implementation of:

- strategic noise mapping: determining noise exposure using common noise indicator and methods of assessment;
- informing the public: providing information on environmental noise and its effects;
- adopting action plans: based on the results of noise mapping, seeking to reduce noise where necessary and protect environmental noise quality where it is good.

The directive applies to environmental noise to which humans are exposed, particularly in built-up areas, public parks, quiet parts of urban areas, quiet areas in the open country and near schools, hospitals and other sensitive buildings and areas. It focuses explicitly on major roads, major railways and major airports. The directive does not apply to noise caused by the exposed person, noise created by neighbours, noise at workplaces, noise inside means of transport, or noise due to military activities in military areas.

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The Environmental Noise Directive is subject to review as it requires the Commission, by 18 July 2009 at the latest, to submit a report on the implementation of this directive, particularly assessing the need for further Community actions on environmental noise.

2. Principal Obligations of Member States

- Member States had to bring into force the laws, regulations and administrative provisions necessary to ensure compliance with the directive by 18 July 2004.
- Member States had to designate competent authorities responsible for implementing the directive, including authorities responsible for making, approving and collecting noise maps and action plans. The Commission and the public had to be informed of these authorities by 18 July 2005 (Art. 4).

2.1 Preparation of Noise Maps

First stage: by 30 June 2005 (and thereafter every five years), each Member State had to inform the Commission of all of the following within its territory:

- agglomerations with more than 250,000 inhabitants;
- major roads with more than 6 million vehicle passages per year;
- major railways with more than 60,000 train passages per year; and
- major civil airports with more than 50,000 movements per year (Art. 7(1)).

By 30 June 2007, strategic noise maps showing the situation in the previous calendar year had to be drawn up for all of these sources of noise (Art. 7(1)).

Second stage: by 30 June 2008, each Member State shall inform the Commission of all of the following within its territory:

- agglomerations with more than 100,000 inhabitants;
- major roads with more than 3 million vehicle passages per year;
- major railways with more than 30,000 train passages per year (Art. 7(2)).

By 30 June 2012, strategic noise maps showing the situation in the previous calendar year shall be drawn up for all of these sources of noise (Art. 7(2)).

The noise indicators L_{den} and L_{night} (see Annex I of Directive 2002/49/EC) shall be used for noise mapping. Until common assessment methods are established by the Commission, Member States may apply and adapt data based on existing methods of assessment, provided that such data are not more than three years old (Art. 5).

Strategic noise maps (which must satisfy the requirements of Annex IV of the directive) shall be reviewed and revised every five years (Art. 7(5)).

2.2 Noise Action Plans

- In the first stage, action plans for agglomerations and places in the vicinity of major roads, railways and airports should be drawn up by 18 July 2008. These plans shall aim to manage noise issues and effects, including by noise reduction measures if necessary, and to protect quiet areas from increased noise (Art. 8(1)).
- In the second stage, action plans for agglomerations, major roads and railways shall be drawn up by 18 July 2013 (Art. 8(2)).

- Measures adopted under the plans are left to the discretion of the competent authorities. However, they should address priorities that may be identified by the exceeding of any L_{den} or L_{night} limit value or any other criteria chosen by the Member State and communicated to the Commission, and take into account the results of the required public consultation (Art. 8(1)-(3)).
- Action plans (which must meet the requirements of Annex V of the directive) shall be reviewed and revised when a major development occurs affecting the existing noise situation and at least every five years after approval (Art. 8(5)).

2.3 Information to the Public and Public Participation

- Strategic noise maps and action plans shall be disseminated to the public in accordance with Directive 2003/4/EEC on public access to information on the environment (Art. 9).
- The public shall also be consulted about proposals for action plans and given opportunities to participate in the preparation and review of such plans and the results of this participation shall be taken into account when preparing or reviewing actions plans (Art. 8(2) and (7)).

3. Implementation

3.1 General

To transpose the directive into the national legislative framework, the following must be established:

- Legal provisions establishing competent authorities responsible for making, approving and collecting noise maps and action plans.
- Provisions for the application of the directive with regard to all elements defined in the directive, including specifically to “agglomerations, major roads, railways and airports”.
- Legal provisions for the drawing up and review of noise maps and action plans, including taking into account in so doing the results of the required public consultation.
- Legal provisions for consultation with the public about proposals for action plans and for public participation in the preparation and review of such plans.
- Provisions for the dissemination to the public of noise maps and action plans.

The actors most likely to be involved in or affected by implementation of the directive are:

- Central government to frame national legislation and, in particular, the government departments responsible for the environment and for transport (and possibly, but to a limited extent, for defence).
- The competent authority or authorities with responsibility for making, approving and collecting noise maps and action plans.
- The private sector (particularly transport, but also operators of installations regulated under Directive 2008/1/EC on integrated pollution prevention and control, and so forth).
- Those responsible for noise-sensitive buildings, such as schools and hospitals.
- NGOs and individuals affected by environmental noise.

3.2 Institutional Aspects

The following issues need to be taken into account:

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- An authority with responsibility for the national transposition of the directive should be assigned. Inter-ministerial co-operation will assist the process of transposition, as both the ministry of the environment and the ministry of transport are likely to have a particular interest in environmental noise management. The authorities assigned should be:
 - a competent authority or authorities with responsibility for making, approving and collecting noise maps and action plans;
 - a competent authority or authorities with responsibility for preparing and submitting information to the Commission as required by the directive.

3.3 Monitoring, Surveillance and Enforcement

The following actions need to be planned in order to address the monitoring, surveillance and enforcement aspects of this directive:

- Communication to the Commission of the agglomerations and major roads, railways and airports covered by the directive.
- Monitoring of the drawing up and review of strategic noise maps and action plans.
- Ensuring operation and application of the consultation and notice provisions and requirements.
- Monitoring and enforcing compliance with measures imposed in action plans.

3.4 Reporting

The competent authorities should submit the following information to the Commission (see also Annex VI of Directive 2002/49/EC):

- the steps taken to harmonise national laws with the provisions of the directive;
- the text of the national laws transposing the provisions of the directive;
- the competent authorities designated for the purpose of implementing the directive and for making, approving and collecting noise maps and action plans;
- administrative procedures established for the implementation of the directive;
- the agglomerations and major roads, railways and airports covered by the directive (in the two stages described above);
- other information requested by the Commission.

4. Phasing Considerations

The following timetable summarises the main milestones leading up to and following the implementation of the directive:

- Phase 1: Designate responsible authority for national transposition of the directive.
 Draft legislation.
- Phase 2: Determine institutional structure.
 Set up or designate competent authorities responsible for making, approving and creating noise maps and action plans.
 Inform the Commission of the competent authorities.
- Phase 3: Inform the Commission of the first stage (2005).

- Make noise maps for first stage (2007).
- Make action plans for first stage (2008).
- Phase 4: Inform the Commission of the second stage (2008).
- Make noise maps for second stage (2012).
- Make action plans for second stage (2013).

5. Costs

The costs of implementation will depend on whether any noise mapping, zoning and action plans are already in place (as is the case in several Member States). However, the basic costs have been estimated as follows.

5.1 Agglomerations

- Noise mapping: The cost is estimated to be EUR 0.15 to 2 per resident.
- Action plans: No explicit data are available, but the cost is assumed to be in the same order of magnitude as the cost of noise mapping.

5.2 Major Airports

The total cost of a noise map and action plan for a major airport depends on the size of the airport and will be between EUR 50,000 and 2 million.

5.3 Major Roads and Railways

Noise maps and action plans for roads and railways are simpler and cover a smaller number of residents than agglomerations. The costs should be estimated on the same basis and at a similar rate to the costs for agglomerations.

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